

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A method for selecting a resultant mode of operation for at least two modems that communicate via a communications network, the method comprising:

(a) performing a handshake procedure ~~in order to~~ determine a set of possible modes of operation supported by the at least two modems, the set of possible modes of operation including protocol standards and annexes that are supported by the at least two modems;

(b) ~~deriving, from the set of possible modes of operation, a set of favorable modes of operation; and,~~ deriving a set of favorable modes of operation from the set of possible modes of operation; and

(c) in case there exist two or more favorable modes of operation, performing a probing-based selection ~~that comprises by~~ evaluating respective performances of said each of the favorable modes of operation and selecting [[the]] a favorable mode of operation with [[the]] a best performance from among the set of favorable modes as [[a]] the resultant mode of operation.

2. (Currently Amended) The method of claim 1, wherein the protocol standard in which the protocol standards supported by said modems comprise xDSL standards, with at least one of the protocol standards being is selected from [[the]] a group consisting of G.992.1, G.992.2, G.992.3, G.992.4, and G.992.5.

3. (Currently Amended) The method of claim 2, in which wherein step (a) comprises:

(a)(i) performing the handshake procedure to determine the set of possible modes of operation supported by the at least two modems, the set of one or more of the possible modes of operation are being related to particular annexes of said xDSL standards the protocol standard.

4. (Currently Amended) The method of claim 1, ~~in which said set of favorable modes of operation is derived from said set of possible modes of operation wherein step (b) comprises:~~

(b)(i) deriving the set of favorable modes of operation from the set of possible modes of operation by performing a priority-based selection.

5. (Currently Amended) The method of claim 4, ~~in which said priority-based selection comprises wherein step (b)(i) comprises:~~

(b)(i)(A) a first level of priority-based selection, whereby from the possible modes of operation, selecting a first set of favorable modes of operation is selected from among the set of possible modes of operation using a first level of priority-based selection based on priorities assigned to different classes of upstream tone usage.

6. (Currently Amended) The method of claim 5, ~~in which said~~ wherein the different classes of upstream tone usage comprise, in descending order of priority, annex J type, annex B type, and annex A type.

7. (Currently Amended) The method of claim 5, ~~in which~~ wherein step (b)(i)(A) comprises:

(b)(i)(A)(1) selecting the first set of favorable modes of operation from among the set of possible modes of operation using a first level of priority-based selection based on priorities assigned to different classes of upstream tone usage, one or more of said the different classes of upstream tone usage [[are]] being excluded from said the priority-based selection.

8. (Currently Amended) The method of claim 5, ~~in which said priority-based selection comprises~~ wherein step (b)(i) further comprises:

(b)(i)(B) a second level of priority-based selection, whereby, from the first set of favorable modes of operation, selecting a second set of favorable modes of operation is selected from among the first set of favorable modes of operation using a second level of priority-based selection based on priorities assigned to various protocol standards.

9. (Currently Amended) The method of claim 8, ~~in which said~~ wherein the various protocol standards are prioritized in a descending order of priority, at least one of the various protocol standards being selected from a group consisting of G.992.5, G.992.4, G.992.3, G.992.1, G.992.2, and non-ITU standards.

10. (Currently Amended) The method of claim 9, ~~in which substantially the wherein same priority is assigned to the protocol standards G.992.3, the G.992.4, and the G.992.5 standards are assigned a similar priority.~~

11. (Currently Amended) The method of claim 1, ~~in which said probing-based selection comprises wherein step (c) comprises:~~

(c)(i) initialising ~~said the at least two~~ modems to a probing mode of operation when the two or more favorable modes of operation exist.

12. (Currently Amended) The method of claim 11, ~~in which wherein step (c)(i) comprises:~~

(c)(i)(A) initialising the at least two modems to ~~the probing mode of operation is~~ a diagnostic mode of operation when the two or more favorable modes of operation exist.

13. (Currently Amended) The method of claim 11, ~~in which said probing-based selection comprises wherein step (c) comprises:~~

(c)(i) measuring ~~line conditions~~ a condition of the communications network, ~~in particular the signal to noise ratio, for the probing mode of operation; and~~

(c)(ii) determining a signal-to-noise ratio of the communications network using a measured condition.

14. (Currently Amended) The method of claim 1, ~~in which said probing-based selection comprises wherein step (c) comprises:~~

~~(c)(i) estimating line conditions a condition of the communications network, in particular the signal to noise ratio, for the probing mode of operation, and~~

~~(c)(ii) determining a signal to noise ratio of the communications network using an estimated condition.~~

15. (Currently Amended) The method of claim 1, ~~in which said probing-based selection comprises wherein step (c) comprises:~~

~~(c)(i) determining, for each of the favorable modes of operation, determining at least one of an upstream bit rate and a downstream bit rate for each of the favorable modes of operation.~~

16. (Currently Amended) The method of claim 1, ~~in which said probing-based selection comprises wherein step (c) comprises:~~

~~(c)(i) determining, for each of the favorable modes of operation, determining a performance index indicating the respective performance performances for of the respective mode of operation each of the favorable modes of operation.~~

17. (Currently Amended) The method of claim 1, ~~in which, for each one of the favorable modes of operation, wherein step (c)(i) comprises:~~

~~(c)(i)(A) deriving [a] the performance index indicating the respective performance performances for of the respective mode of operation each of the favorable~~

modes of operation is derived from line conditions of the communications network determined for the probing mode of operation.

18. (Currently Amended) The method of claim 15, ~~in which for each of the favorable modes of operation, a performance index PI is determined using the following formula: wherein step (c)(i) comprises:~~

(c)(i)(A) determining a performance index (PI) for each of the favorable modes of operation according to:

$$PI = \alpha_d \cdot (DS - DS_{\min}) + \alpha_u \cdot (US - US_{\min}),$$

wherein in which DS and US denote the downstream and the upstream bit rate, respectively, DS_{min} and US_{min}, denote the minimum downstream and the minimum upstream bit rate, respectively, and in which α_d and α_u denote arbitrary parameters weight factors.

19. (Currently Amended) The method of claim 16, ~~in which~~ wherein step (c) further comprises:

(c)(ii) selecting the favorable mode of operation with [[the]] a highest performance index is selected as the resultant mode of operation.

20. (Currently Amended) The method of claim 16, ~~in which,~~ wherein step (c) further comprises:

~~(c)(ii) determining in case all the performance indices of the favorable modes of operation are equal to a maximum; a secondary performance index is determined when all of performance indices from among the performance index are equal to a maximum;~~
and

~~(c)(iii) evaluated evaluating the secondary performance index~~ for each of the favorable modes of operation.

21. (Currently Amended) The method of claim 11, ~~in which said probing-based selection comprises wherein step (c) further comprises:~~

~~(c)(ii) deciding whether the modems have to [[be]] re-initialised~~ re-initialise the at least two modems before data transmission is started.

22. - 23. (Cancelled)

24. (Currently Amended) A modem unit ~~adapted~~ for transmitting data via a communications network, ~~said modem unit comprising:~~

a transmission unit ~~adapted for performing~~ configured to perform a handshake procedure in order to determine a set of possible modes of operation, the set of possible modes of operation including protocol standards and annexes that are supported the modem unit, and for deriving, ~~from said set of possible modes of operation; to derive~~ a set of favorable modes of operation from among the set of possible modes of operation;
and

a probing facility ~~adapted for performing, where there exist two or more favorable modes of operation, configured to perform~~ a probing-based selection that comprises evaluating respective performances of said favorable modes of operation when two or more favorable modes of operation exist [[,]] whereby and to select [[the]] a favorable mode of operation with [[the]] a best performance ~~is selected~~ as a resultant mode of operation.

25. (Currently Amended) The modem unit of claim 24, ~~in which the protocol standards supported by said modem unit comprise xDSL standards, said wherein the~~ modem unit is configured to support a protocol standard selected from the group consisting of at least one of the protocol standards G.992.1, G.992.2, G.992.3, G.992.4, G.992.5.

26. (Currently Amended) The modem unit of claim 24, ~~in which said wherein~~ the modem unit is either from among a group consisting of a central xDSL modem [[or]] and a remote xDSL modem.

27. (Currently Amended) The modem unit of claim 24, ~~said modem unit being adapted for deriving said wherein the transmission unit is further configured to derive the~~ set of favorable modes of operation ~~from said set of possible modes of operation by performing a priority-based selection.~~

28. (Currently Amended) The modem unit of claim 27, in which said priority-based selection comprises:

a first level of priority-based selection ~~selection, whereby from the possible modes of operation, for selecting~~ a first set of favorable modes of operation from among the set of possible modes of operation ~~is selected~~ based on priorities assigned to different classes of upstream tone usage.

29. (Currently Amended) The modem unit of claim 28, ~~in which said~~ wherein ~~the priority-based selection further~~ comprises:

a second level of priority-based selection ~~selection, whereby from the possible modes of operation, for selecting~~ a second set of favorable modes of operation from among the first set of favorable modes of operation ~~is selected~~ based on priorities assigned to various protocol standards.

30. (Currently Amended) The modem unit of claim 24, ~~in which said~~ wherein ~~the probing facility is adapted for initialising~~ further configured to initialise the modem unit to a probing mode of operation to perform the probing-based selection.

31. (Currently Amended) The modem unit of claim 24, in which said wherein ~~the probing-based selection comprises:~~

~~probing facility is adapted for one of measuring or estimating~~ determining line conditions of the communications network ~~[[,]] and~~

~~determining in particular the signal-to-noise ratio~~ a signal-to-noise ratio of the communications network based upon the line conditions.

32. (Currently Amended) The modem unit of claim 24, ~~in which said wherein the probing facility is adapted for further configured to determine determining, for each of the favorable modes of operation,~~ a performance index indicating the respective performancee performances of the respective mode of operation for each of the favorable modes of operation.

33. (Currently Amended) The modem unit of claim [[24]] ~~32, in which said wherein the probing facility is adapted for selecting is configured to select~~ the favorable mode of operation with [[the]] a highest performance index as the resultant mode of operation.

34. (Currently Amended) The modem unit of claim 24, ~~in which said wherein the probing facility is adapted for deciding configured to decide~~ whether the modems have modem unit has to be re-initialised before data transmission is started.

35. (Cancelled)

36. (Cancelled)